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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,726	11/17/2003	Mario Merlin	IR-2261	4657
2352	7590	02/09/2006	EXAMINER	
OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403			IM, JUNGHWA M	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 02/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/714,726

Applicant(s)

MERLIN ET AL.

Examiner

Junghwa M. Im

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-8, 13 and 20 is/are allowed.
- 6) ☒ Claim(s) 1-3, 9-12 and 14-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spitz et al. (US 6060776), hereinafter Spitz in view of Lebby et al. (US 5838703), hereinafter Lebby.

Regarding claim 1, Fig. 1 of Spitz shows a semiconductor device package, comprising a base portion [3], a semiconductor die [4] electrically mounted on the base portion, a lead [8] electrically coupled to the die, a perimeter wall [12] to the base portion and an encapsulant [13] filling at least a portion of the space within the perimeter wall and encapsulating the die and a portion of the lead.

Fig. 1 of Spitz shows most aspect of the instant invention except “a perimeter wall snap fitted to the base portion.” Fig. 1 of Lebby shows a semiconductor device with a perimeter wall [30] snap fitted to the base portion [21].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Lebby to the device of Spitz in order to have the wall snap fitted to the base portion to lock the mounting structure to the perimeter wall.

Regarding claim 2, Fig. 1 of Spitz shows the die including a top surface and a bottom surface opposite of the top surface, and it is inherent that the die in Fig. 1 of Spitz has a bottom

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and a top electrode. Fig. 1 of Spitz the bottom (electrode) is soldered to the base portion [5b], the lead is soldered to the top (electrode) [5a], such that the lead, the die and the base portion are electrically connected.

Regarding claim 3, Fig. 1 of Lebbly shows the perimeter wall includes an inwardly extending bulge positioned at a lower portion of the perimeter wall such that the bulge snap fits to the base portion.

Regarding claim 9, Fig. 1 of Spitz shows the lead [8] comprises a lower portion [7] coupled to the top electrode of the die and a stem portion joined to the lower portion.

Regarding claim 17, Fig. 1 of Spitz shows a semiconductor device package, comprising:
a base portion [2] comprising an upper surface,
a lower surface opposite of the upper surface and a sidewall [9] extending between the upper surface and the lower surface, a portion of the sidewall defining a recessed portion;
a semiconductor die [4] having a bottom surface electrically mounted on the upper surface of the base portion and having a top surface opposite of the bottom surface;
a lead [8] electrically mounted on the top surface of the die such that the lead forms an electrical terminal for the package;
a perimeter wall [12]; and
an encapsulant filling [14] at least a portion of the space within the perimeter wall, encapsulating a portion of the lead and the die.

Fig. 1 of Spitz shows most aspect of the instant invention except “a perimeter wall including a lip extending inwardly from the perimeter wall such that the lip is capable of being snapped into the recessed portion of the base portion, securing the ring to the base portion.” Fig.

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1 of Lebby shows a semiconductor device with a perimeter wall [30] including a lip [32] extending inwardly from the perimeter wall such that the lip is capable of being snapped into the recessed portion of the base portion, securing the upper portion to the base portion [21].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Lebby to the device of Spitz in order to have a perimeter wall including a lip extending inwardly from the perimeter wall such that the lip is capable of being snapped into the recessed portion of the base portion to lock the mounting structure to the perimeter wall.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spitz and Lebby as applied to claim 9 above, and further in view of Wasmer et al. (US 5005069), hereinafter Wasmer.

Regarding claim 10, the combined teachings of Spitz and Lebby show most aspect of the instant invention except “the lower portion of the lead is comprised of copper or a copper alloy.” Fig. 4 of Wasmer shows the lower portion of the lead [173] is comprised of copper or a copper alloy (col. 4, lines 44-51).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Wasmer to the device of Spitz and Lebby in order to have the lower portion of the lead comprised of a copper alloy to improve the contact of the lead to the electrode of die.

Regarding claim 11, Wasmer discloses that the stem portion of the lead is comprised of copper or a copper alloy (col. 4, lines 44-51).

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Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spitz and Lebby as applied to claim 3 above, and further in view of Barnett et al. (US 6541800), hereinafter Barnett.

Regarding claim 14, the combined teachings of Spitz and Lebby show most aspect of the instant invention except “the perimeter wall is comprised of a composite material formed into an annular shape.” Fig. 3 of Barnett shows the perimeter wall [a lower portion of the lens 18] is comprised of a composite material [col. 6, lines 7-10] formed into an annular shape.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Barnett to the device of Spitz and Lebby in order to have the perimeter wall comprised of a composite material formed into an annular shape to utilize the well known material for easier formation of annular shape.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spitz and Lebby as applied to claim 17 above, and further in view of Barnett.

Regarding claim 18, the combined teachings of Spitz and Lebby show most aspect of the instant invention except “the base portion further comprises a threaded extension, and the threaded extension extends in a direction normal to the lower surface.” Fig. 9A of Barnett shows that “the base portion further comprises a threaded extension, and the threaded extension extends in a direction normal to the lower surface.”

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Barnett to the device of Spitz and Lebby in order to have a threaded extension of the base portion, and the threaded extension extending in a direction

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normal to the lower surface to enable the connection to the complementary structure in the package.

Regarding claim 19, Fig. 9A of Barnett shows the perimeter wall (a portion below the dome) is annular and the recessed portion is a radially cylindrical groove.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spitz, Lebby and Wasmer as applied to claim 11 above, and further in view of Yoshinaga et al. (US 5886403), hereinafter Yoshinaga.

Regarding claim 12, the combined teachings of Spitz, Lebby and Wasmer show most aspect of the instant invention except “the lower portion and the stem portion of the lead are joined by capacitance discharge soldering using an eutectic solder.” Yoshinaga discloses that the lower portion and the stem portion of the lead are joined by using an eutectic solder (a low melting solder; col. 4, lines 14-17), therefore joined by capacitance discharge soldering.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Yoshinaga to the device of Spitz, Lebby and Wasmer in order to have the lower portion and the stem portion of the lead joined by capacitance discharge soldering using an eutectic solder to alleviate the pressure on the die from the high heat.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spitz Lebby and Barnett as applied to claim 14 above, and further in view of Kagi et al. (US 6821613), hereinafter Kagi.

Regarding claim 15, the combined teachings of Spitz, Lebby and Barnett show most aspect of the instant invention except “the composite material is polyphenylsulfide reinforced by glass fibers.” Kagi discloses that the composite material of polyphenylsulfide reinforced by glass fibers (col. 12, lines 20-28).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Kagi to the device of Spitz, Lebby and Barnett in order to have the composite material of polyphenylsulfide reinforced by glass fibers to improve the structural strength.

Regarding claim 16, the combined teachings of Spitz, Lebby, Barnett and Kagi fail to the glass fiber comprises about 40% of the composite. However, it would have been obvious to one of ordinary skill in the art at the time of the invention made to have an intended glass fiber content for the composite material recited in pending claim, since it would have been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only in routine skill in the art. *In re Aller*, 105 USPQ 233.

Allowable Subject Matter

Claims 4-8 13 and 20 are allowed.

Response to Arguments

Applicant's arguments filed November 21, 2005 have been fully considered but they are not persuasive.

1. Applicants mainly argue that “[A]pplicants also submit that there is no motivation to modify the device package of Spitz in view of Lebby, as indicated by the Examiner. Specifically, the Examiner equated Lebby side support ring 30 to Spitz wall 12 and indicated that it would be obvious to modify Spitz wall 12 to be snap fitted to base 3 in view of Lebby side support ring 30. Applicants respectfully disagree. In particular, Lebby side support ring 30 is completely divergent from and is not related to Spitz wall 12. Spitz wall 12 retains encapsulant 13, which protects chip 4. On the contrary, Lebby side support ring 30 is part of a lens 18, which provides laser beam focusing, and no where does Lebby teach or suggest that side support ring 30 retains encapsulant. Accordingly, because Lebby side support ring 30 is different from Spitz wall 12 there is no suggestion or motivation in Spitz or Lebby to modify Spitz wall 12 in view of

Accordingly, because Lebby side support ring 30 is different from Spitz wall 12 there is no suggestion or motivation in Spitz or Lebby to modify Spitz wall 12 in view of Lebby side support ring 30. Applicants also respectfully submit that contrary to the Examiner's assertion, the equivalent element of Spitz wall 12 appears to be Lebby sidewalls 21 and not side support ring 30. Accordingly, if one were to modify Spitz wall 12 in view of Lebby, such modification would be in view of Lebby sidewalls 21. However, sidewalls 21 are not snap fitted to base 20. As such, there is no suggestion or motivation to modify Spitz wall 12 to be snap fitted to base 3 in view of Lebby sidewalls 21.” It is pointed out that a base reference of Spitz shows most aspect of the instant invention except a shape of the perimeter wall. The Lebby reference is introduced as a secondary reference merely to show the teachings of a shape of a perimeter wall, that is, “a perimeter wall snap fitted to the base portion.” Fig. 1 of Lebby shows this aspect. Therefore, the

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combined teachings of Spitz and Lebby would result in a structure recited in the instant invention.

2. Applicants argue that “Yoshinaga only teaches that chip 170 is soldered to mount 171c with solder 172 and that lower portion 173a of lead 173 is soldered to the upper surface of chip 170 with solder 174. Yoshinaga does not teach or suggest at column 4, lines 14-17 that lower portion 173a is soldered to the stem, let alone that lower portion 173a and the stem are ‘joined by capacitance discharge soldering using an eutectic solder,’ as claim 12 recites.” Firstly, it is pointed out that the instant invention does not define how ‘a stem portion’ should be configured. Secondly, the bottom portion 173a of Yoshinaga’s stem is joined by a eutectic solder 174 (a low melting solder; col. 4, lines 14-17).

3. Applicants argue that “[T]here is no suggestion or motivation to add a threaded extension to lower surface 1 of press-fit base 2 of diode 100. First, diode 100 is specifically designed as a press-fit diode in which contact to chip 4 is to occur through region 11 and wire 8. As such, the addition of a threaded extension to lower surface 1 adds no benefit and is contrary to the teachings of Spitz” and “[T]he addition of a threaded extension to the lower surface 1 of press-fit base 2 would render diode 100 unsatisfactory for its intended purpose. Specifically, the addition of a threaded extension would hinder press-fitting die 35 from being used to exert a force against lower surface 1 in order to press-fit the diode 100 into rectifier arrangement 36.” Examiner disagrees. It is pointed out that Applicants have not provided a tangible evidence to support this contention. Rather, it is pointed out that what is argued is merely based on the applicant’s speculation/assumption.

3. Applicants argue that “[T]here is no suggestion or motivation to combine such teachings of Barnett with a device package as recited by claim 17 when the underlying structures as recited by claim 17 and as shown in Barnett Figure 9A are there is no suggestion or motivation to combine such teachings of Barnett with a device package as recited by claim 17 when the underlying structures as recited by claim 17 and as shown in Barnett Figure 9A are inherently different.” It is pointed out that the Barrett reference is further introduced merely to complement a shape of the perimeter wall which is deficient with the teachings of Spitz and Barnett.

4. Applicants argue that “[T]here is no suggestion or motivation to combine the teachings of Kagi with that of Spitz, Lebby, and Barnett and that Spitz, Lebby, Barnett, and Kagi thereby fail to teach or suggest claim 15, in addition to claim 16, which depends therefrom.” It is pointed out that the Kagi reference is referred to show a material for the perimeter wall formed with the combined teachings of Spitz, Lebby, and Barnett. And Kagi teaches such a material is used to improve structural strength in col. 2, lines 1-20.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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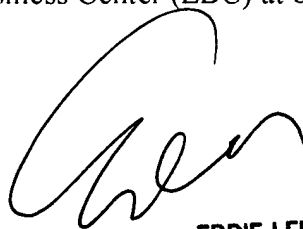
the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Junghwa M. Im whose telephone number is (571) 272-1655. The examiner can normally be reached on MON.-FRI. 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jmi



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